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which, when they are completed, will go far to solve the problem: in excavating the ancient Palatium on this site, its use in Christian times was proved by the presence of frescos dating from about the same period as our coins. A full account of these discoveries is given on p. 241.

A. L. FROTHINGHAM, JR.

DI UN ANTICHISSIMO OROLOGIO SOLARE RECENTEMENTE SCOPERTO
IN PALESTRINA. Memoria di Orazio Marucchi. Estratto dagli
Annali dell' Inst. di corrisp. archeol., anno 1884. Roma, 1885.

In the early days of Rome but little attention was paid to astronomy, and the question of the time of day must have had but a vague and shadowy hold on the Roman people, as it was long before any signal for the midday hour was added to those of sunrise and sunset: this signal was given by the consul when the sun appeared between the rostra and the *græcostasis*. The custom of proclaiming the hours from the comitium was maintained until the time of the first Punic war, when *sun-dials* were first introduced through contact with the Greek cities of Magna Graecia and Sicily. The first sun-dial was brought to Rome from Catania in 491 U. C., and, notwithstanding its incorrectness on account of the difference of latitude, it remained in use for about a century until it was replaced by Quintus Martius Philippus by one constructed for the Roman latitude. As the twelve hours of the day were, throughout the year, counted from sunrise to sunset, the winter hours were far shorter than the summer hours: all ancient sun-dials must have been constructed on this basis. Some of the forms described by Vitruvius have been found: in all of them the system employed is that of the *single* gnomon.

Varro (*De L. L.* vi. 4.) describes a sun-dial in the city of Praeneste which he, at the close of the republican period, calls ancient: *Meridies ab eo quod medius dies D antiqui in hoc loco non R dixerunt, ut Praeneste incisum in solarium vidi. Solarium dictum id in quo horae in Sole inspiciebantur, quod Cornelius in basilica Aemilia et Fulvia inumbravit*. Many have sought in Praeneste (Palestrina) for traces of the archaic sun-dial, but without success until Marucchi discovered it on the façade of an ancient building which was transformed in the IX. century into the Cathedral. "This building is rectangular in plan, twenty metres long by nine in width, is built of large squared masses of stone of Gabii, and may with confidence be attributed to the VI. century of Rome." On removing the plaster on the upper part of the façade Professor Marucchi discovered four grooves, cut in the stone, which he found to radiate from a common

centre: unfortunately the destruction of the central part of the wall has left only the extremities of these grooves. This sun-dial was different from any hitherto known, in having not *one* but *six* gnomons, one for each hour, and consequently for each line, at the extremity of which it was placed; while in the centre there must have been a vertical one for mid-day. These metal styles threw their shadow down their line at the corresponding hour, but the correspondence was perfect only during equinoctial days. It would be necessary to annex a plate in order to follow the calculations by which the writer proves his position. He considers the building to which it was attached to have been not a temple but the civil Basilica of Praeneste.

A. L. F., JR.

PREHISTORIC FISHING IN EUROPE AND NORTH AMERICA.—By Charles Rau, Washington City. Published by the Smithsonian Institution, 1884. [Smithsonian Contributions to Knowledge, 509]. 342 pp., 405 figs. 4to.

At the Paris Exposition of 1868, Anthropology had a most excellent installation, the two concepts, race and function, having equal importance. If you moved along certain parallel aisles you would be able to study the anthropology of a certain race, its anatomy, industries, arts and social life. If you passed along another series of parallel aisles, at right angles to the first, you would be able to follow out any division of anthropology in its manifestation throughout the world. Formerly, both in museums and in published works, it was customary to pursue the ethnic method altogether. Owing to the impetus given to comparative technology by Gustav Klemm, and later by Lubbock and Tyler, each human art has been subjected to a searching investigation, in order to understand its elaboration, its origin and life history.

In our own country, no one student has pursued this method of investigation more persistently and successfully than Dr. Charles Rau, from whose pen has just appeared a Smithsonian contribution to knowledge, entitled, "Prehistoric Fishing in Europe and North America." The author admits that he never caught a fish in his life, yet, from his constant devotion to the one study and conscientious determination to know the truth, he has produced a work which will remain the standard upon this subject. European fishing is first treated, extending from the Drift to the close of the Bronze Age. The quarternary beds have yielded no objects directly referable to fishing, but the caves of France, Switzerland and England have disclosed bones of fish, harpoon heads, and